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Perceptions and experiences of sustainability among producers in the REKO alternative food network in Finland

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Abstract

The modern industrialized food system has faced criticism for several decades. Since the 1990s, various alternative food networks (AFNs) have attempted to increase the economic, environmental and social sustainability of the food system. A recent innovation in Finland, REKO food rings, was motivated by the desire to enhance the livelihood of farmers and to facilitate a broader change in agricultural practices. It applies contemporary social media tools to organize communication and trade between producers and consumers. The present paper analyses perceptions and experiences of sustainability among REKO producers using thematic interviews and questionnaire data. The results show that the expectations for increased sustainability are high, but the producers nevertheless face multiple challenges to ensure sustainability in their daily practices. Many producers reported having modified their production methods to be more environmentally sustainable already before joining REKO. With regards to economic sustainability, after an enthusiastic start, the positive impacts of REKO have started to diminish. Our findings point to the variations and dynamics of the experiences and perceptions that exist across locations and product segments.

Keywords: alternative food networks, local food, producers, sustainability, REKO, Finland

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Introduction

From the 1960s onwards, various alternative food and green consumption movements have criticized and challenged the modern system of industrialized food production and distribution (Belasco 1989; Gabriel and Lang 2015; Kauffman 2018). Perennial criticism is aimed at a variety of interlinked health, ecological and socio-economic problems associated with how modern food is produced, processed, and distributed (Kneafsey et al. 2008). According to the critics, the increasingly monopolistic power of large-scale food processors and retailers over the food supply chain has led to a disconnection between farmers and consumers and reduced negotiating power and incomes for farmers (Ilbery and Maye 2005). Others have pointed to the adverse climate impacts of intensive farming and long supply chains (Hedberg 2016; Mariola 2008; Michel-Villarreal et al. 2019; Duram and Oberholtzer 2010). Increased consumer awareness about the impacts of industrial farming practices on food safety and human and animal wellbeing has created a demand for local and sustainable food products (Ilbery and Maye 2005).

In the late 1990s, alternative food networks (AFNs), such as farmer's markets (FM), community supported agriculture (CSA), box schemes, and ethical purchasing groups started to emerge in several countries. In general terms, AFNs are described as forms of food provisioning with particular characteristics that differ from or seek to counter "conventional" modes of producing, distributing and consuming food (Murdoch, Marsden, and Banks 2000; Tregear 2011). By "conventional", we refer to a type of food system that is reliant on industrialized methods of food production and processing, where the distribution and trade is organized in long supply chains, and success is measured by operational efficiency (Tregear 2011). In practice, however, the line between "conventional" and "alternative" is difficult to draw, as producers often operate in both realms (Ilbery and Maye 2006).

In this paper, we focus on a novel type of AFN, the REKO system that emerged in the Ostrobothnia region of western Finland in 2013. REKO is a type of food ring dedicated to the trading of locally produced food where producers and consumers meet face-to-face. As a network of direct trade, REKO shares features with other types of AFNs (i.e. CSA and farmers markets) that seek to link consumers directly with the producers of local food. Peculiar to the REKO model is its reliance on social media (Facebook) for both orders and information sharing among the networked members. The use of Facebook has enabled REKO to grow exponentially and spread across (and beyond) Finland within a few years. The growth of the network in both size and number of local rings marks a difference from other types of AFNs, as the network has reached and engaged with a broad spectrum of producers and consumers with diverging interests and socio-environmental concerns about food production and consumption (Ehrnström-Fuentes and Leipämaa-Leskinen 2019).

Research suggests that as alternatives to conventional production and distribution methods, AFNs are partly motivated by and hold the potential to contribute to a diverse set of sustainability goals (Forsell and Lankoski 2015; Maxey 2006). Generically defined, sustainability in AFNs refers to a network's capacity as a whole to produce economic, environmental, and social outcomes that strengthen the local economy and farm livelihoods while providing healthy food produced in an ecologically benign and socially responsible way. This broad definition of sustainability

encompasses economic, environmental, and social aspects related to food provision both on the farm and at a wider societal level.

Previous studies on AFNs have identified a plethora of sustainability promises and expectations related to these three dimensions of sustainability. For example, economic sustainability is often operationalized as the network's capacity to create a positive correlation between producer participation in AFNs and economic outcomes, allowing farmers to capture a higher proportion of the value added to their produce (Renting, Marsden, and Banks 2003; Sage 2003). Other suggested economic aspects are increased negotiation power for individual producers and (better) market access**,** as selling directly may be the only way for small producers to find consumers (Forssell and Lankoski 2015). Finally, it has been claimed that AFNs can contribute to sustainability on a wider scale in the local economy through job creation and increased economic activity (Forssell and Lankoski 2015).

Regarding environmental sustainability, AFNs may be motivated by such issues as the promotion of biodiversity (Hedberg 2016), reduced use of chemicals (Schoolman 2018), animal welfare (Ilbery and Maye 2005) and reduced food miles (Duram and Oberholtzer 2010; Mariola 2008). Although food waste and waste in general are not common topics of debate in the AFN literature (Forssell and Lankoski 2015), AFNs can support farmers in reducing food waste either by minimizing unharvested and unsold edible products (Canali et al. 2017) or by affecting consumer perceptions about edible products (Griffin, Soba, and Lyson 2009). Furthermore, health aspects may also motivate some AFN producers (Murdoch, Marsden, and Banks 2000; Renting, Marsden, and Banks 2003).

A core assumption in AFN literature is that social embeddedness leads to increased social sustainability, as the value of products rests on both price and the moral consideration held by the people involved in the network (Renting, Marsden, and Banks 2003; Sage 2003). Face-to-face interaction is expected to enhance trust among producers, processors, and consumers, while restraining producers from being dishonest about their production methods (Morris and Kirwan 2009). AFNs may foster the reconnection of farmers with their markets and communication between producers and consumers, which might lead to "exchanges of information, a process of education, but also to the fostering of relations of care within particular projects" (Kneafsey et al. 2008, 95–96). This shared learning is expected to create empowered consumers and producers (Forssell and Lankoski 2015; Kneafsey et al. 2008) and an increased appreciation for agriculture, food quality, and the work of farmers (Opitz et al. 2017). Others have suggested that bridging the interests of farmers and consumers can create support structures for sustainable agriculture through building a sense of community (Feagan and Henderson 2009). Finally, while labour rights and work conditions are prominent in the study of conventional food supply chains (Maloni and Brown 2006), these issues are often overlooked in the AFN literature (Forssell and Lankoski 2015).

Nevertheless, various scholars in the field have warned against using rigid predefined criteria in assessing sustainability (e.g. Ilbery and Maye 2005). On the one hand, such criteria might not reflect the definitions of the actors in the field. Participants in AFNs are not necessarily motivated by sustainability at all (Tregear 2011, Forssell and Lankoski 2015), or they may only focus on certain aspects of it (Michel-Villarreal et al. 2019). On the other hand, with such criteria AFN sustainability might be assessed based on the desired benefits and not on the actual outcomes of

the practices involved (Hedberg 2016; Maxey 2006; Tregear 2011). According to Larch Maxey (2006), if dealt with in separation, the criteria do not allow for an analysis of the dynamics at play when the economic, environmental, and social dimensions interact in the specific contexts in which the AFNs are located. Therefore, Maxey has suggested a more process-oriented thinking, where the focus is on the negotiations and interactions involved in AFNs. These discussions include calls for more empirical research that examines the sustainability of AFNs based on "the beliefs, motivations and constructed meanings of the actors directly involved" (Tregear 2011, 428), thereby seeking to understand the actors' perceptions of – and commitment to – sustainability (Forssell and Lankoski 2015).

While mindful of the shortcomings of the different approaches to sustainability in AFNs, in this study, we operationalize the three dimensions of sustainability based on the key aspects referred to in the previous literature discussed above. This preliminary operationalization was also necessary in order to design a survey questionnaire for the REKO producers.

In the present study, we aim to address two gaps in the previous research on AFNs. First, many studies focus on just one dimension of sustainability, or they are restricted to empirical cases in a singular context (Michel-Villarreal et al. 2019). Most of the initial research looked at either the economic factors or the social impacts of particular AFNs (Murdoch, Marsden, and Banks 2000; Sage 2003), while environmental aspects have been addressed more recently (Morris and Kirwan 2009; Hedberg 2016; Schoolman 2018). Although a few studies on AFNs have empirically examined all three sustainability measures together (Ilbery and Maye 2005; Maxey 2006), they have not paid attention to the dynamic interactions between the three different dimensions of sustainability. Second, there is little research that goes beyond single case studies and includes the perspectives of a broad number of producers in different locations (Michel-Villarreal et al. 2019). Research on the sustainability of AFNs has tended to rely on experiences from particular AFNs located in one geographical location or from the perspective of a limited number of producers dedicated to one type of food production (Michel-Villarreal et al. 2019).

This study aims to address these gaps by exploring REKO producers' perceptions and experiences of sustainability in several geographical areas in Finland and among several producer groups. Due to its rapid expansion, REKO involves a high number and variety of producers. This offers a unique opportunity to explore how the three dimensions of sustainability are approached based on different farm realities. We also consider the dynamic processes at play when the economic, environmental and social aspects interact in different contexts within the REKO network. The study explores REKO producers' experiences of changes in production practices after joining REKO and their perceptions of how participation in REKO has affected the sustainability of their activities according to the three dimensions. We examine the producers, since they play a significant role in changing agricultural practices. REKO was originally set up by a producer concerned about the detrimental economic, social, and environmental impacts that the conventional food system has on producers in Finland (Snellman 2018), and this further motivates our focus. Specifically, we ask how economic, environmental, and social sustainability are perceived, and we explore whether different producer groups differ in their experiences and perceptions.

We first outline the history of REKO and the main characteristics of the REKO rings in Finland. We then move on to describe the materials and methods of the study. In the results section, we present the perceptions and experiences of three different types of REKO producers in terms of economic, environmental, and social sustainability. Based on the findings, we discuss how these three aspects of sustainability are perceived and valued among REKO producers and how the perceptions and experiences of sustainability interact dynamically in the three main dimensions. Finally, we briefly discuss the potential for growth and the possible impact that this kind of AFN can have on the wider conventional food system.

The Study Setting

REKO is a network of local food groups of producers and consumers (called "REKO rings") connected through closed Facebook groups. The name is an abbreviation of the Swedish *Rejäl Konsumtion* ("Fair Consumption"). Inspired by the AMAP (*Association pour le Maintien de l'Agriculture Paysanne*) system in France, the first two pilot REKO rings were set up in Ostrobothnia in 2013. As also illustrated by the survey results presented later in the material and methods section, the network consists of a wide range of different types of food producers who deliver their produce to REKO rings located near their farms.

According to Thomas Snellman, a farmer and the founder of REKO network, the initiative was motivated by the desire to enhance the livelihood of farmers and to facilitate a broader change in agricultural and food distribution practices (Snellman 2018). In contrast to the AMAP system, which is based on long-term seasonal contracts between consumers and producers, the REKO system is organized around weekly pre-orders placed through Facebook. Membership is open to everyone by application, and there is no obligation to make a minimum number of purchases. The producers announce their weekly product offering on the Facebook group's wall, and the consumers order their food through the comments section. The delivery of the pre-ordered food takes place weekly or fortnightly at an easily accessible, free car park at a defined time (20–60 minutes). The use of Facebook for orders allows the system to function without membership fees for any of the parties involved.

Each REKO ring is set up and managed by voluntary administrators, who are producers, consumers, or both. The administrators set the time and place for the deliveries and the rules regarding the kind of food producers and products allowed. The rules vary between different rings and cover such matters as the distance to the farm, organic certification, and permitted ingredients. Only one rule is shared by all REKO rings: no intermediaries are allowed in the trade of food. This is motivated primarily by legislation, as different regulations apply to direct sales and sales through intermediaries, but it has also been justified in terms of reconnection and information sharing, as the producers and consumers meet face-to-face.

After the success of the first rings, the concept quickly became popular across Finland. In 2018 – when the material for this study was collected – there were approximately 200 REKO rings (Facebook groups) with a total of 280,000 members (representing more than 5% of Finland's population), of which approximately 4,500 were producers (statistics produced by Thomas Snellman). Not all of the members are actively engaged in the REKO trade, and sales fluctuate according to the seasonal availability of fresh produce.

In contrast to other models of AFN, REKO is thus a system that has a potentially wide reach to both producers and consumers with different backgrounds and preferences in terms of food sustainability. This wide reach of the REKO concept and the dynamic relationship between the farmers' interests and wider sustainability objectives makes REKO an interesting case to investigate in terms of the producers' perspectives on sustainability.

Materials and Methods

We conducted qualitative interviews and a questionnaire survey among REKO producers. In total, 18 producers were interviewed by the first author in early April 2019 at the interviewees' farms. The selection criteria of the producers were as follows. First, we included primary producers engaged in different types of production, since we assumed that experiences of REKO might vary according to production category. Thus, we selected three of REKO's most in-demand product categories (cf. Kvist 2016, 14): cattle breeding and meat production, egg production, and field-grown vegetables. These were also among the top five categories that REKO producers engaged with, according to our survey (see later in this section). Second, we focused on two different geographical locations to ensure variation in experiences with REKO. Third, we contacted the majority of the producers within the selected categories in these locations. The final selection of interviewees depended on their availability and the farm locations for logistical reasons. Nine interviewed producers are from the Ostrobothnia region and deliver to Finland's first two REKO rings, and nine are from southern Finland and deliver to REKO rings in the metropolitan area of Helsinki (Uusimaa region), the capital of Finland. The product categories of the interviewees were as follows: cattle breeding and meat production (seven interviewees), egg production (five interviewees) and field-grown vegetables (six interviewees). In the analysis, the interviewees are named according to product category and location (e.g. Egg2/Ostrobothnia, Vegetable5/Uusimaa).

The interviews were conducted with a set of questions addressing the producers' experiences and perceptions of the economic, environmental, and social dimensions of sustainability in terms of their production. We focused on the experiences within the REKO food networks, including justifications for deciding to join the network, the manner in which participation in REKO had impacted their livelihood, their farming practices, and their understanding of sustainability in the agri-food sector. The interviews lasted from 35 to 70 minutes and were transcribed verbatim.

A survey was conducted in January 2018 to gain information from producers active in the most established REKO rings (Ostrobothnia) and in more recent REKO rings in major urban regions in Finland (Helsinki in Uusimaa and Tampere in Pirkanmaa). An invitation letter (and two reminders) to participate in the research was sent to all 314 REKO producers in these regions (96 in Ostrobothnia, 106 in Uusimaa and 112 in Pirkanmaa) through Facebook's messenger. The response rate was 27.4% (n = 86). The questionnaire contained 33 questions on the producer's background, REKO rings, and related experiences and perceptions.

Of the survey respondents, 45% lived in Ostrobothnia 25% in Uusimaa, 26% in Pirkanmaa and 4% in other areas. Some 57% of the respondents were full-time producers, 57% had 0–1 employee, and the mean number of employees was 1.8. In Ostrobothnia, 66% were full-time producers, whereas the figures were lower in Uusimaa (48%) and Pirkanmaa (55%). The most common

production category was meat (29%).[2] For most respondents, REKO provided only a minor part of their income.[3]

In the analysis of the interview material, the first and second author began by coding one interview separately while seeking utterances related to the various aspects of the three dimensions of sustainability. After comparing and agreeing on the results, the first author analysed the rest of the interviews. In the analysis, the interview material was organized in Excel. First, the data were divided according to location (Ostrobothnia and Uusimaa) and product segment (meat, eggs, field-grown vegetables). For each location and product segment, we searched for accounts of economic, environmental, and social sustainability, which were then further organized in separate Excel worksheets. Next, the interview material was organized into smaller units representing the various subcategories of the sustainability dimensions.

The analysis of the survey data was conducted with SPSS. Because of the small number of respondents, we report only percentages in the appendix tables. In the text, we report some differences between the geographical areas in a descriptive manner. Due to the small number of respondents and the variety of product categories, it was not possible to report perceptions and experiences by each product category.

It is important to note that producer access to REKO rings is granted by the administrators, who set the criteria for what kind of products and production methods are allowed in each ring. Thus, these criteria also have a bearing on what types of sustainability measures and perceptions our study has uncovered.

Results

In the previous sections, we broadly defined sustainability in AFNs as the capacity to produce positive economic, environmental, and social outcomes. In the following analysis, we consider those aspects but also the dynamic processes at play when the different economic, environmental, and social aspects of sustainability interact in different contexts within the REKO network. The analysis is based on survey data from three different REKO regions (Ostrobothnia, Pirkanmaa and Uusimaa) and interview material from two regions (Ostrobothnia and Uusimaa).

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[2] The other production categories were greenhouse vegetables (9%), berries and berry products (8%), eggs (7%), outside horticulture (7%), bakery goods (7%), grains and cereals (6%), milk (4%), processed meat or fish products (4%), dairy products (2%), ready-made foods like falafel and sauerkraut (2%), and other (15%).

[3] Some 66% made 1–20% of their income from REKO. Of the remainder 14% made 21–40%, 10% made 41–60%, 5% made 61–80%, and 5% made 81–100% of their income from REKO. In Uusimaa, a third of the producers earned at least 41% of their income from REKO, whereas only 9% in Pirkanmaa and 18% in Ostrobothnia did so.

Economic Sustainability

In the analysis of the economic sustainability of REKO, we focus on producer perceptions and experiences of profitability, negotiating power, access to the market, and the effects of REKO on job creation.

In the survey, 44% of the producers reported an increase in profitability as a very important reason for joining REKO; it was somewhat important to another 40% (Appendix 1). Some 62% of the survey respondents believed that REKO enhances profitability (Appendix 2), while 53% reported that after joining REKO, their profitability had increased either somewhat or considerably (Appendix 3). Moreover, 23% of the producers reported that their sales prices had increased (Appendix 3). This reported increase in profitability was more common in Uusimaa than in the two other areas (Pirkanmaa and Ostrobothnia; data not shown in appendix tables).

All interviewed producers reported that it was difficult to make a profit from farming in general and that initially REKO had improved their earnings at least to some extent, as the following quote exemplifies:

> In the beginning, we sold really well when we had orders for up to 1000 euros per delivery. Then there was a positive effect on our profitability when the car was totally packed for each delivery. (Vegetable1/Ostrobothnia)

In terms of negotiating power, increasing autonomy in decision making was more often a very important reason for joining REKO among the Ostrobothnia producers (42%) when compared to the producers in Uusimaa (33%) and Pirkanmaa (9%). Overall, joining REKO to fight the power of retail chains was very important to 34% and somewhat important to 35% (Appendix 1). In the interviews, the majority of the producers reported that REKO provided them with more negotiating power to set the price than when selling through the conventional supply chain, as explained by one meat producer:

> At REKO, I can set the price at a level so that I get paid for my work. When I sell to the slaughterhouse, I just have to accept the price that they give me. (Meat7/Uusimaa)

For 48% of the survey respondents, "market expansion" was a very important reason for joining REKO, and it was a somewhat important reason for another 35% (Appendix 1). In the interviews, producers from all product categories reported better market access due to REKO. For some of the meat producers, for example, selling through the conventional supply chain was not possible due to their type of produce (highland meat, which is not a staple in Finnish supermarkets) or the low prices offered by wholesalers. REKO provided them with a suitable market for their products, since it gave them immediate access to a large customer base without extra marketing costs.

> You don't have to make any big investments, pay any advertising agencies or anything like that, or have someone make a homepage for you. You just put out an advertisement and go there. (Meat1/Ostrobothnia)

For the small organic egg producers, REKO was vital in terms of providing access to a market that would cover their production costs. Selling through egg packers and conventional supply chains

was noted to be extremely unprofitable and driven by economies of scale. REKO gave the egg producers a much greater share of the market price, and in Uusimaa they also reported that consumers were willing to pay a higher price for eggs from small organic farms. The following producer points this out:

> I wouldn't produce eggs if I had to sell to wholesalers. Then you can forget the whole thing. Western Finland is full of those who produce cheap [eggs] for wholesalers. (Egg5/Uusimaa)

Most of the vegetable producers saw REKO as "a good compliment" (Vegetable3/Ostrobothnia) to their other sales channels. REKO had given the vegetable producers the opportunity to sell products that did not comply with supermarket standards, or to test new vegetables that were not yet in demand. They also used REKO as a marketing platform to make their products known among local consumers, and thus more attractive when sold through supermarkets. Furthermore, REKO freed vegetable producers from the regular supermarkets' requirement of constant delivery and enabled sales according to availability:

> Partly there is an advantage, if you compare [selling] for example to wholesalers and supermarkets. There you have to have a particular product, […] it must be available every week. When you sell to REKO, the repertoire is more flexible. One week you can sell lettuce for a special price if there is a lot of it. [...] This way you can dismantle overproduction at a decent price. You can't do that with supermarkets, tell them "oh, this week we can't deliver any cucumbers, we will only have those in three weeks," [...] because they want them all the time. If they want them at all. (Vegetable4/Uusimaa)

In the survey, 70% were of the opinion that REKO would bring new job opportunities to the countryside (Appendix 2). Still, only 13% reported that their number of employees had increased after joining REKO (Appendix 3). The interviews showed that in terms of job creation and rural development – which are economic sustainability indicators used on the broader scale of local economies – REKO's impact was perceived to be twofold. On the one hand, it had not opened up opportunities to employ more people on the farms that had been established prior to joining the REKO system. On the other hand, four out of five of the interviewed egg producers reported that as a result of joining REKO, they had been able to start their businesses with small facilities for organically certified eggs. Thus, it seems that REKO has an impact on job creation more by creating new business opportunities than by boosting existing farms.

These findings suggest that at least initially, the producers felt that REKO sales improved the profitability of the farm, increased their negotiating power vis-à-vis the buyers of their products, and provided better market access. While the effects on job creation have been low, REKO has still played an important role in providing a market for producers of specialty products who, due to cost pressures, logistical constraints or product specificities, cannot sell their products through regular supply chains.

Environmental Sustainability

In the analysis of environmental sustainability, we focused on how participation in REKO has affected the environmental dimensions related to food production and distribution, such as food miles, food waste, biodiversity, use of chemicals, and animal welfare.

On a general level, the survey results show that environmental sustainability was not reported as often as a reason for joining REKO when compared to economic reasons: it was a very important or somewhat important reason for only 22% and 30% of the respondents, respectively (Appendix 1). Moreover, 66% reported that they had already shifted to more ecological production methods before joining REKO, and only 4% had made such changes after joining (Appendix 4).[4] For 47%, increasing the production of local food was a very important reason for joining REKO, and it was a somewhat important reason for another 30%.

In the interviews, the producers' responses to environmental concerns gave the impression that REKO had not had a direct impact on their farming practices. Instead, they claimed that their production methods were rather driven by personal preferences, the production structure at the farm and overall consumer demand coming from broader food trends in society. Most participants explained that their decisions related to farming practices were made before entering REKO, as the following meat producer explained:

> REKO hasn't really changed the way we do things. We have such a marginal product, and are in such a marginal market, and we have never really wanted to produce bulk products, any basic meat production or basic eggs or those kinds of things. We have only wanted to have our own small product that we can have as a hobby in a way. So, I don't think REKO has impacted our production methods. (Meat5/Uusimaa)

In the survey, 56% of the producers were of the opinion that REKO increases the wellbeing of animals (Appendix 2). However, 48% of all respondents (i.e. almost all whose production concerned animals) reported that they had paid attention to the wellbeing of animals already before joining REKO, with only 1% paying attention after joining (Appendix 3).

In the interviews, egg producers explained how REKO's increasing profit margins enabled production methods that maintained the wellbeing of the animals:

> REKO has maybe had an influence in the sense that now it is possible to do this as a job. To keep animals well. It doesn't have to be the money that decides what kind of production we have. But we can do what is good for the animals. And that someone is ready to pay so that we take care of our animals. (Egg4/Uusimaa)

[4] This was the case especially with the producers in Uusimaa (81%) when compared to producers from Pirkanmaa (55%) and Ostrobothnia (68%).

However, it seems that this aspect was restricted to egg producers, as meat producers claimed that consumers were not ready to pay a premium for animal welfare. One explanation offered by an egg producer was that unlike meat products, organic eggs can be sold through REKO at a lower price than through supermarkets (Egg4/Uusimaa).

In the survey, 90% of the respondents believed that REKO reduces food miles (Appendix 2). In the interviews, we asked participants to subjectively estimate the impact of REKO on their food miles. Almost all producers felt that their REKO products travelled less compared to produce sold through conventional supply chains across Finland. However, the producers handle the transport themselves in the REKO rings – both to abattoirs and to customers – while in conventional supply chains, the transport is provided by external logistics companies that manage much larger quantities. This makes comparisons of subjective food miles difficult. The distance travelled varied greatly between producers and categories, depending on the location of the farm, the abattoirs, and the number of REKO rings in which the producers participated, as well as the frequency of deliveries. The interviewees calculated their REKO food miles to be anything from 30 to 2500 kilometres per week.

Unlike in conventional retailing, all food in REKO is pre-ordered, which has the potential to reduce food waste. The majority of the vegetable growers reported the flexible selling of produce at seasonal peaks as a beneficial outcome of the REKO trade on food waste. Among the meat producers in our study, there were diverging views about food waste. Two meat producers suggested that REKO can reduce food waste by creating a market for edible products that would otherwise be destroyed. For example, one cattle farmer noted that he could offer parts of the animal that could not be sold through other channels.

> What is good with REKO is that most of the parts of the animal can be sold, also those parts that usually are not in demand such as bones, cheeks, and people even buy liver and lard. I think it is a good thing that nothing from the animal goes to waste. (Meat2/Ostrobothnia)

Still, the majority of meat producers noted that the product most in demand was minced meat, and that it was actually difficult to sell all parts of the animal through REKO. Thus, it is not clear to what extent REKO significantly reduces food waste in meat production.

These results suggest that REKO has not directly impacted production methods on the farms, but rather recruits farmers that are already inclined towards safeguarding environmental sustainability. This was reflected also in the interviews, where only some minor impacts were reported as a result of REKO. Some noted that the REKO market is still too marginal to affect their production methods.

Social Sustainability

In the analysis of social sustainability, we focused on how producers perceived REKO had changed their social relations and fostered a reconnection with consumers and a sense of community, as well as enhanced shared learning and cooperation among producer-peers and consumers.

In the survey, 62% and 28% of the respondents reported getting closer to consumers was a very important or a somewhat important reason for joining REKO, respectively (Appendix 1). Some 94% believed that REKO brings producers and consumers closer to each other, and 92% believed that REKO increases trust between consumers and producers (Appendix 2). Moreover, 41% reported that after joining REKO, they had taken consumers' wishes into account more (Appendix 4).

In the interviews, all the producers felt that REKO fosters relations with both consumers and fellow producers at least to some extent. REKO has made it possible for producers to get to know their customers personally, allowing them to focus less on price and more on product quality in the producer-consumer interaction.

> It is the direct contact with the customers that is most important. I get to discuss the products at REKO, while when dealing with wholesalers the focus is always on the price, which is not that stimulating or uplifting. (Vegetable1/Ostrobothnia)

Most REKO producers stated that a common social benefit was getting to know fellow producers. In principle, they considered other producers as partners rather than competitors, and they appreciated how REKO enabled new relationships to be formed:

> It becomes a habit to stand there and talk to the same people, and then there are somewhat longer breaks in between two REKO delivery stops, then we all go to Shell for a coffee before continuing on the road. And you notice that people have started to cooperate outside of REKO too. (Meat7/Uusimaa)

However, particularly the cattle breeders in both Ostrobothnia and Uusimaa reported fierce internal competition between producers with similar meat products in those REKO rings with decreasing demand, and this sometimes created friction in the producer relationships and hampered sustained cooperation (see the next section on the dynamic relationship between sustainability dimensions).

In the survey, 91% were of the opinion that REKO increases consumers' awareness of agriculture, and 81% believed that REKO increases consumers' awareness of the sustainability of food (Appendix 2). In the interviews, the producer-consumer encounters were presented as a two-way learning process. All producers noted that meeting consumers at the delivery points had made them more aware of the consumers' opinions. Almost all producers in the three product segments felt that through REKO, consumers had become more aware of different aspects related to food production. For example, one egg producer explained:

> A lot of people have been very surprised about how big hen houses really are. If I say that I have 1000 hens, they are like, "oh that many!" Then I have said that this is actually a very small egg production facility [in comparison to others]. (Egg4/Uusimaa)

Similarly, all the vegetable growers felt that consumers learning to know what foods are both in season at particular times and locally available was an almost automatic outcome of the REKO

trade. An additional benefit noted by one producer was that consumers learned to appreciate the taste of fresh vegetables.

> Many realize that it is really worth buying [from REKO], or that you get really good stuff from there. They might notice it when they taste and eat [the vegetables] that there is a real difference [from the vegetables from the supermarket]. (Vegetable6/Uusimaa)

However, the majority of the interviewed producers also expressed concerns that consumers are not particularly interested in knowing more about production methods, and that this interest had further waned as the REKO trade has become more of a routine. This was backed up by the survey, where 81% of the respondents reported that they were concerned about consumers' waning enthusiasm. One of the interviewees expressed this concern:

> Actually, the consumer is not that interested as I see it. In the beginning, they were more interested. At the first meeting, the consumers asked about how we keep the animals. And I said, come and see. Then we had an open house and I think we had some 60–70 people at the shop, but only about ten of them had a look at the animals. It is really strange people didn't come to see the animals. (Meat3/Ostrobothnia)

Many interviewees reported that the brief announcements in the Facebook groups and the short duration of the delivery times did not offer much space to discuss things other than the actual order. However, it was mostly at the delivery points and not through Facebook that consumers raised questions and learned about the origins of the food. For this reason, most producers found that the REKO rule obliging them to go personally to the delivery points was important in maintaining this connection with the consumers. Furthermore, a few producers noted that it is difficult to raise contentious issues related to other producers' wrongdoings in REKO because of the bad feelings and conflicts it might produce among people they see as partners and friends. They hoped that the administrators would shoulder the responsibility for enlightening the consumers about the impact of different production methods on animals and the environment, giving consumers the necessary information to choose the "right" types of producers.

All producers had experiences of selling through several REKO rings, and most noted that the sense of community varied among groups, depending on how actively involved the administrators were. The following quote makes this clear:

> I have been involved since they started all the REKO rings in the Helsinki region. And so now, it is interesting to see how they have changed. Nurmijärvi is maybe the only place that has remained like it was in the beginning. I don't know why, but there the administrator maintains this kind of "our REKO" mentality and is active. There the producers also talk about all kinds of things among themselves. The atmosphere is different. (Meat5/Uusimaa)

Community building was also a result of the organisational characteristics of REKO, as the weekly face-to-face encounters in car parks resulted in close ties to producer-peers and returning customers, as expressed in the following quotes:

> For me right now, community in REKO means that I have found producer friends. After having stood in the same car parks for over three years, we have started to think about how we can cooperate. Currently, the sausage producer uses our meat in his sausages. […] Maybe community comes from those kinds of things. And I have got those returning customers. (Meat5/Uusimaa)

> It's a kind of a community. […] I like it because it really fits with the way I kind of see communities, in that they're free to join, no-one's forced to join it. […] And we're exchanging goods, we're exchanging ideas, and we're talking. And it feels like... it's a [farmers'] market place, and that's kind of cool. But it's a market place that has some kind of shared values, even though there aren't really hard and fast rules about who should be here. But it's a dialogue between the administrators, the people who buy there, and the producers, and they hash it out. I think that's really cool, and it's happening without some outside authority. (Vegetable5/Uusimaa)

In addition, the variety and number of producers was noted to influence community development in the rings. Regulating this was largely regarded as the responsibility of the ring administrators, whose involvement in the steering of the activities was also perceived to be key to how well each REKO ring functioned. Administrators who were themselves local and sought to allow mostly local producers to sell their produce in the ring were considered more successful in keeping the community spirit alive. Producers from all regions also considered it more difficult to create such a spirit in bigger cities compared to smaller communities.

In terms of social sustainability, our findings indicate that the connections created between producers, their peers and customers had to some extent improved cooperation and fostered a sense of community. However, the internal competition, the waning interest of consumers, and the administrators' fluctuating engagement in keeping the REKO spirit alive seemed to hamper the effects that these interactions could have on building trusting relations and meaningful cooperation with both consumers and peers.

The dynamic relationship between sustainability dimensions

A key premise in our approach to sustainability is the dynamic relationship between the three sustainability dimensions. In our research material, this dynamic manifested as tensions between the various aspects of these dimensions. The tensions resulted both from the structural characteristics of the REKO system itself and from changes in the viability of individual REKO rings over time.

One instance of such a dynamic interaction between sustainability dimensions is the tension between the value placed on face-to-face encounters between producers and consumers on the one hand and food miles on the other. REKO values direct contact and discourages the use of middlemen in selling food. Goods need to be delivered personally by the producer to enable the direct meeting with customers. However, each producer driving their produce individually to the various delivery points creates individualized logistical patterns and probably increases food miles.

Thus, in this case, aspects of social sustainability (fostering reconnection, communication and trust) and environmental sustainability (reducing food miles) clash.

Another issue stems from REKO's somewhat ambiguous rules concerning the required characteristics of products and production methods. Individual rings accentuate different aspects of ethical food production, which point to different dimensions and aspects of sustainability. Some rings might have strict environmental criteria (e.g. exclusively or preferably organic produce) but be more flexible in terms of the origin of the food, while others might emphasize locality at the cost of production methods. Putting the emphasis on local food – and thus on community ties and social sustainability – is not necessarily environmentally sustainable if the local producer does not adhere to ecological production methods. This is in line with Michael Winter's (2003) warnings about "defensive localism", where local food overrides concerns for organic or ecological food. Moreover, in locations where consumers are not primarily concerned about the environmental impacts of farming, dominant actors that use more chemical inputs in their production, for example, can crowd out smaller organically certified competitors if allowed into the rings. This was the experience of both an egg producer and a vegetable grower in Ostrobothnia.

The dynamics between sustainability dimensions was further accentuated when the initial enthusiasm for REKO began to wane. After an initial "honeymoon period", individual rings often struggled with diminishing consumer demand. This created problems on many levels. To begin with, making a profit from REKO sales became more challenging. In some rings, administrators tried to reignite consumer interest by admitting new producers to the rings, thus offering more product choice. However, liberal admittance policies created internal competition between producers and made it challenging for them to plan production and predict sales. The increase in total sales did not compensate for the fact that more producers were now dividing the total demand into smaller portions.

This aspect was highlighted particularly by the meat producers. Some producers reacted by becoming more selective in choosing which rings to participate in or distancing themselves from the REKO community altogether. For example, several meat producers explained that the quantities sold at REKO had become so small that it only made sense to participate when they could combine the delivery with other errands in town. Other producers increased the number of rings they delivered to, thereby aiming to compensate for the diminishing demand. However, more rings meant more deliveries, longer distances to drive and more time spent selling, which was considered disadvantageous to profitability. Both the meat and vegetable producers pointed out that the extra work and costs related to their REKO sales ate into their earnings substantially. Thus, there was no longer necessarily a positive correlation between producer participation in REKO and economic outcomes (cf. Renting et al. 2003; Sage 2003). Moreover, allowing new producers into rings – i.e. giving them (better) market access – was detrimental to the profits of individual producers. Consequently, there was a tension between different aspects of economic sustainability. Lastly, the power of ring administrators to decide on membership challenges the negotiating power of producers, which is one aspect of economic sustainability, although sometimes administrators are themselves producers.

These issues on the economic dimension had repercussions on the two other dimensions. Both the meat and egg producers discussed the detrimental effect of access policies on food miles, a key

aspect of environmental sustainability. Allowing distantly located new producers into the rings increased food miles both directly and through the growing competition between producers. To meet their sales targets, producers needed to seek new rings further away, leading occasionally to paradoxical situations where two producers were driving past each other when making deliveries:

> You start noticing that those from further south also sell in Pietarsaari because they cannot get everything sold in Vaasa. And then they also go to Kokkola and we start driving past each other. (Meat3/Ostrobothnia)

Previous research on food miles has found that the loss of economies of scale in short supply chains involving many small farms may worsen the environmental impact of transported goods (Duram and Oberholtzer 2010; Mariola 2008). Although our study did not calculate these types of changes, our data point to how increased competition scatters the sales of individual producers, leading to an overall increase in the network's total food miles.

Similarly, with regards to social sustainability, internal competition affected producer relations and community building. In most cases, fellow producers were identified as partners and a community of support, but increasing competition could introduce strain in the relationship within the same product category. Admitting more producers and expanding the geographical area of producer members could have detrimental effects on the sense of community. For example, one meat producer lost interest in building a sense of community after producers from northern Finland were allowed in to compete with her in the south of Finland:

> But the kind of community as I understand it when you try to make a particular place better, that kind of community does not exist in any of the REKO rings where I go. I would really like to have it, but it would require a kind of commitment that is not worth making if there is suddenly someone from Oulu [in northern Finland] selling meat there. (Meat5/Uusimaa)

The dynamic relations between the different dimensions of sustainability manifested themselves as a number of tensions. These tensions were generated by structural aspects of the REKO system, including the emphasis placed on face-to-face interaction and the strong autonomy of individual rings, and aggravated through the increasing competition introduced into rings when the initial honeymoon period was over. The tensions were located on multiple levels: i) between the economic sustainability of the whole REKO system, individual rings and individual producers in the ring; ii) between the economic, social and environmental sustainability effects generated by REKO activities; and iii) between aspects within singular dimensions of sustainability.

Discussion and Conclusions

On a general level, the REKO producers of the present study associated REKO with improved performances in all three dimensions of sustainability. The survey in particular reveals optimism towards the potential of the REKO network. The findings from the interviews suggest that most producers stressed the economic aspects of sustainability, and the survey results show that also social aspects and the promotion of local food were important to producers when joining REKO. The promotion of ecological sustainability was less often seen as an important reason for joining

REKO, and the interviews revealed that REKO membership and increasing interaction with the consumers rarely had any effect on the producers' views regarding sustainability.

In terms of economic sustainability, REKO has offered better economic opportunities particularly to producers of specialty or niche products. REKO sales gave them higher profits for their produce compared to other sales channels. This was not only a question of better profit margins, a key benefit to all types of producers, since the greater share of value enabled producers to sustain operations that are socially and environmentally more sustainable compared to "regular" production and, in the case of eggs, to start new businesses with explicit sustainability goals.

Producers identified many social benefits in REKO, such as bringing producers and consumers closer to each other, creating trust, and increasing consumer awareness. One key assumption in the AFN literature is that as this "reconnection" between producers and consumers fosters communication and learning among both groups, it may lead to improved overall sustainability in food production (Kneafsey et al. 2008). Although there were some references to meaningful and long-lasting producer-consumer interactions, many producers noted that REKO provided limited space for deeper interaction with consumers, as communication is limited to short Facebook announcements and quick face-to-face meetings at the delivery points. Many producers noted that there is little time to discuss broader issues related to the core values that underpin their production methods. Still, all producers greatly valued the friendly bonds they were able to establish with the returning customers. There is thus a certain degree of reconnection that takes place in the REKO network, although it is not exactly clear how it leads to concrete changes in food provisioning practices from the perspective of improving food sustainability on a more general level.

With regards to the relative unimportance of environmental sustainability to the producers, the phenomenon might be explained by the claim that they had invested in ecological production methods and better animal welfare already before joining REKO. This indicates that REKO might mostly attract those farmers who are oriented towards environmental sustainability in the first place by offering them opportunities to make their business economically feasible.

The changes in the REKO network over time created tensions and brought out the dynamic relationship between the sustainability dimensions. The increasing internal competition between farmers offering the same products – as reported particularly by the meat producers in our study – had repercussions not just on the economic but also on the environmental and social dimensions. The effect of increased competition on the profitability of individual farms has also been a reported outcome in other types of AFNs (Galt et al. 2016). Our study shows how both the farmers' profitability suffers from competition and the individual producers' food miles and their commitment to building a sense of community in REKO rings are also adversely impacted. This further shows how economic concerns still override other sustainability measures in a market-based system such as REKO.

In line with previous research (Ilbery and Maye 2005; Maxey 2006), both the results from the survey and the producers' accounts of REKO indicate that sustainability in AFNs is a multifaceted phenomenon that cannot be analysed without considering the context in which these initiatives emerge. Experiences and perceptions of the different sustainability aspects varied greatly between types of production and even among producers within the same product category. However, some

patterns did emerge from the material. Meat producers found value in the direct access to local markets, which also improved their negotiating power towards abattoirs in the conventional supply chain. The higher prices retained by egg producers made it possible for them to avoid the economy of scale and focus more on animal welfare while still being profitable. Vegetable growers used the REKO system mainly to compliment other sales channels, both to find an outlet for seasonal peaks of produce – thereby reducing food waste – and to get to know the consumers and their preferences better. These differences in producer perceptions reflect the degree of specialisation in modern agriculture, where the structures in the conventional supply chains of meat, eggs, and vegetables also affect how producers position themselves and perceive sustainability in the AFN. Hence, it is not only the AFN that is shaped by the prevailing system (Ilbery and Maye 2005; Maxey 2006); the way producers experience sustainability in the AFN depends on the structures of the wider system of food production in which they are embedded.

The comparison of producers in three areas revealed some patterns. The questionnaire study showed that in Ostrobothnia, two thirds of producers were full-time producers and agriculture provided the majority of the income for half of them. By contrast, in Uusimaa, there were fewer full-time producers overall and fewer who made the majority of their income from agriculture, but there were more producers who earned a significant amount of their income from REKO. These structural differences have probably led to some differences in the perceptions of REKO's sustainability between the two areas. However, a detailed analysis of the associations would require a larger dataset that is both qualitative and quantitative. Nevertheless, our results suggest that in different regions with varying agricultural histories and arrangements and consumer segments, AFNs such as REKO lead to varying experiences and applications.

We have identified some limitations in the study. The response rate to the survey was low. This may be caused by the use of Facebook messenger to distribute the survey, as some producers may not have seen a message from an unknown source. Moreover, during the time that the survey was open, there were technical problems in the platform (Webropol), complicating the submission of the responses. Finally, the qualitative interviews were conducted among producers in just three product categories and two geographical regions. Hence, caution is advised when generalizing our conclusions on REKO producers' experiences and perceptions of sustainability to other product categories or regions.

Our study focused on producer perceptions and experiences of REKO. To fully understand the dynamics of sustainability in REKO, producer and consumer perspectives should be analysed simultaneously (Cox et al. 2008; DuPuis and Goodman 2005; Holloway et al. 2007). In fact, future research could link producer and consumer perceptions and experiences in multiple countries and institutional environments to develop a more robust theory of how AFNs such as REKO improve the economic, environmental, and social sustainability of food. This is now possible, as REKO has been implemented in several countries besides Finland. In addition, since our analysis has revealed a temporal dynamic in REKO's development, there is a need to conduct a longitudinal study on the network. Such a study would enhance the understanding of how interactions over a longer period of time affect each actor's logic of action and their consequences on all three levels of sustainability.

When assessing the overall potential of the REKO network to facilitate change in the food system and reach various sustainability goals, we need to take into account its key structural features. Hampering the sustained sustainability effect of REKO is the somewhat insular structure of the system itself. Although all rings share some common principles and interact at the administrator level, the whole REKO network lacks deeper coordination between rings (Ehrnström-Fuentes and Leipämaa-Leskinen 2019). Despite its wide geographical reach, REKO is not a nationwide system, but rather a scattered archipelago of self-organized rings. Our results indicate that much hinges on the organisational skills and values of individual ring administrators. They are in a position to "make or break" the social community in each ring, and they decide what type of produce is on offer. Often different values are at odds with each other, depending on the particularities in specific rings: while some are stricter in terms of ecological sustainability, others might accentuate localness at the cost of sustainability. While self-organisation from below is an admirable principle, it might preclude reaching some of REKO's sustainability potential in its various dimensions.

Another structural feature of the REKO network is its complete reliance on Facebook as a communication tool. Facebook has enabled REKO's rapid expansion across Finland, but this dependence may also have adverse effects on the network's durability. While social media reaches people who otherwise cannot be easily reached, it also produces "instant moments of togetherness" rather than long-term communities (Poell and van Dijk 2015). In line with this argument, recent media reports suggest that the popularity of REKO has waned among both producers and consumers (Treier 2019). This could make REKO yet another example of late modern food communities that are based on social media connectivity and spread relatively fast across nations and even globally, but also typically fade quickly (Bildtgård 2008). The challenge for REKO – or any social media-dependent AFN – is thus not only to discover how to raise interest and awareness, but also to learn to build durable networks (Poell and van Dijk 2015).

In principle, REKO promises to be a solution to several problems in the food system of modern, urban and industrialized societies, such as ecological problems, factory farming, the precarious situation of many farmers, shrinking communities, the standardisation of production and distribution, social isolation, and over-powerful multi-national companies. However, in practice the structural features of REKO support individualistic consumer practices characterized by low involvement and sporadic shopping. The downside of the ease of involvement is the readiness to exit. Therefore, REKO might have only limited potential as a network to facilitate broader change. REKO's effect on the greening of Finnish agriculture is likely to be of a more indirect nature: it shows there is market potential for ecologically sound products and increasing awareness among consumers about local food production. This can foster societal debate and put pressure on more mainstream actors in the food chain to change their operational practices.

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Appendices

Appendix 1. Reported reasons for joining REKO according to surveyed producers (n = 314), percentage of respondents.

	Very important reason	Somewhat important reason	Not important reason	Total
To increase profitability	44.2	39.5	16.3	100
To expand the market	47.7	34.9	17.4	100
To promote the ecological sustainability of agriculture	22.1	30.2	47.7	100
To increase the production of local food	46.5	30.2	23.3	100
To increase autonomy in decision making	32.6	40.7	26.7	100
To better manage economic risks	16.3	34.9	48.8	100
To fight the power of retail chains	33.7	34.9	31.4	100
Other farmers inspired me to join	9.3	15.1	75.6	100
To give sense to my work	25.6	44.2	30.2	100
To get closer to consumers	61.6	27.9	10.5	100

Appendix 2. The potential of REKO rings according to the perceptions of the surveyed producers (n = 314), percentage of respondents.

	Fully/ somewhat agree	Neither agree nor disagree	Fully/ somewhat disagree	Total
REKO enhances profitability of production	62.8	24.4	12.8	100
REKO increases the wellbeing of farm animals	55.8	32.6	11.6	100
REKO decreases food miles from the field to plate	89.5	9.3	1.2	100
REKO increases the vitality of the countryside	80.2	15.1	4.7	100
REKO brings new job opportunities to the countryside	69.8	20.9	9.3	100
REKO strengthens the position of food producers in negotiations	59.3	29.1	11.6	100
REKO increases the income of food producers	70.8	18.6	10.5	100
REKO increases the healthiness of food	68.6	16.3	15.1	100
REKO supports biodiversity	61.6	31.4	7.0	100
REKO brings producers and consumers closer to each other	94.2	5.8	0	100

REKO increases consumers' awareness of agriculture	90.7	5.8	3.5	100
REKO increases consumers' awareness of the sustainability of food	81.4	11.6	7.0	100
REKO increases trust between consumers and producers	91.9	5.8	2.3	100
REKO increases predictability in food production	39.5	41.9	18.6	100
Many consumers have become regular clients	83.3	13.1	3.6	100
I am concerned about the consumers' waning enthusiasm	81.4	12.8	5.8	100

Appendix 3. Changes in production after joining REKO according to surveyed producers (n = 314), percentage of respondents.

During the time you have been a REKO producer, how has	Has increased considerably/ somewhat	Has remained the same	Has decreased considerably/ somewhat	Total
…the number of employees changed?	12.8	83.7	3.5	100
…the selling price of produce changed?	23.3	67.4	9.3	100

…REKO affected the profitability of your activities?	53.5	37.2	9.3	100
…the range of produce for sale developed?	55.8	40.7	3.5	100
…the volume of production developed?	54.7	34.9	10.5	100

Appendix 4. Changes in the production process before and after joining REKO according to surveyed producers (n = 314), percentage of respondents.

	Already before joining REKO	After joining REKO	I am interested but have not done so yet	I am not interested	Does not apply to my type of production	Total
Starting a business	81.4	2.3	7.0	2.3	7.0	100
Adopting more ecological production methods	65.9	3.5	11.8	11.8	7.1	100
Paying more attention to the wellbeing of animals	47.7	1.2	3.5	2.3	45.4	100
Taking consumers' wishes into account more	52.3	40.7	3.5	0	3.5	100
Getting ECO certified	27.9	3.5	24.4	27.9	16.3	100